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Expedition 1 crew to bring station to life

With the launch of the first Expedition crew this month, the International Space Station will be transformed from a place to visit to a place to live.

In November, a U.S.-Russian crew of three will begin living aboard the ISS, starting a permanent human presence aboard the orbiting outpost. The crew includes ISS Commander Bill Shepherd, a U.S. astronaut; Soyuz Commander Yuri Gidzenko, a Russian cosmonaut; and Flight Engineer Sergei Krikalev, also a Russian cosmonaut.

When the crewmembers arrive, the station will consist of three modules: the Russian Service Module Zvezda, which will serve as living quarters and on-board control center for the early station; the U.S.-funded and Russian-built Zarya, a module that provides supplementary power and propulsion functions; and the U.S.-built Unity, a connecting module that provides the attachment points for future U.S. segments.

The crew's mission will be a flight test of the new station as they assist with critical assembly activities. The crew will be launched October 30 on a Russian Soyuz spacecraft from the Baikonur Cosmodrome in Kazakhstan.

Gidzenko will serve as the Soyuz commander for the two-day trip from Baikonur to the station.

"After two days, in orbit 32, we'll begin the process of docking," said Gidzenko. "We'll still have a distance [to] approach, then we approach the station, then we have the docking itself. As a rule this is all done automatically, on an automated mode; the flight engineer, the commander and the astronauts or cosmonauts who are monitoring the process, and if something does occur with the automatic docking, well then the crew gets involved and does it manually. Specifically I have two levers that would allow me to control the vehicle to do the approach and docking manually. Then, following the docking, we check the seal, equalizing pressure between the transport vehicle and the ISS. We open [the] hatches. Then we start working on the station."

The first residents will take the station on a shakedown cruise through space

during their four-month stay. They will turn on and test all the parts, preparing the outpost for the arrival of the Destiny laboratory in early 2001.

"The very first thing we're [going to] do is turn the lights on," said Shepherd. "It's kind of like getting into your house. We have a backup computer panel that we're [going to] fire up and make sure that we can

"On shuttle, everything is fairly carefully orchestrated because we don't have a lot of time during the mission, so the planning is very precise about what you're doing almost every minute," said Shepherd. "We won't have that on station. We'll get up every morning, look at the message traffic from the ground, try and figure out what the last-minute changes

can be pretty negative if you don't work out. Between that, doing some Earth observations and we've got a couple science experiments on board. We have a space walk planned, and we have shuttles coming and going all the time, Progress vehicles to load and unload, and we'll stay busy."

The first Expedition crew will welcome a number of space shuttle visitors during its time on board the ISS. Each shuttle flight will deliver different station components.

"The most important flight, I believe, in our scheduled mission is [the] 5A flight, which [will] deliver [the] Lab for us," said Krikalev. "It will mean additional modules for us to live in because 3A and 4A will install equipment outside of the station, and it wouldn't be habitation area for us, but 5A will deliver [the] Lab and its new module, which is going to be [the] central part of [the] U.S. side of the station. It also has new computer systems, new hardware for future scientific equipment, and life support equipment also. So it would be another big and interesting task for us to activate all of this, check it in different modes, reconfigure all computer systems on board to the station to make [the] computers able to talk to each other and exchange information and, actually, I believe [the] biggest task for us will be through all flight, will be computer configuration, and testing hardware and software in different modes."

The Expedition 1 crew will have plenty to do when shuttle crewmembers visit and attach new pieces of hardware to the ISS during several space walks.

"Because a lot of EVAs depend on specific position of the station, we need to be sure that attitude control will be proper, and configuration of jets which hold attitude will be proper because if crew is working somewhere close to jets, we need to be sure that jets wouldn't fire on the shuttle, on the arm, on the crewmembers," said Krikalev. "In many cases, at least 4A would be a good example, after [the] installation of solar arrays, we need to reconfigure system to get power from the solar array, and actually activate [the] computer system, which controls

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When the Soyuz hatch opens and Shepherd, Krikalev and Gidzenko board the International Space Station, it will become a home for cosmonauts and astronauts for 15 or more years. It will be a routine step for our crew; but it will mark a moment when we are permanently changing the course of human space flight. Human space flight will truly become an international operation as we become one group working together to accomplish a common goal.

I want to acknowledge the accomplishments of the Shuttle-Mir Phase One Program, as we mark this new beginning of permanent occupation of the International Space Station. What we learned in those nine Shuttle flights to Mir is now embodied in the teams hard at work in Phase 2 construction of ISS.

I want to acknowledge the connection that every one of us working on this Program feels, as the crew takes their posts. There is a huge team who will be there with the crew each step of the way.

We've arrived at base camp, we have a lot of climbing to do still – the summit is in sight.

—Tommy Holloway, NASA International Space Station Program Manager

talk to the computer. Then we're [going to] go around the house and turn the utilities on, and we're [going to] want to get at the fresh water [to] be able to heat it and make food; turn the toilet on – it's got some assembly that goes with it – configure some radios. And if we get all that done the first day, we'll count it as a success."

Daily activities for the first crew aboard the ISS will be somewhat structured, but not to the extent that they are aboard the space shuttle. Crewmembers will use a program called the Onboard Short Term Plan Viewer to help plan their daily schedules.

have been to the day's plans. We'll have a short conference with Mission Control to discuss this with the flight directors; then we'll get into the day's work. Part of that will be assembly and checkout of various pieces of [the] station, maybe some tests on some gear that has been installed previously that we want to look at. It is a very serious requirement on board to get some exercise every day. Everybody has two hours each day to run on the treadmill and do some other stuff because it's very important to stay healthy because when you're weightless the effects on your body